

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

FACT SHEET

(pursuant to NAC 445A.236)

- I. **Permittee Name:** City of Henderson
240 Water Street
Henderson, NV 89015
- II. **Permit Number:** NV0022098 – Renewal
- III. **Location:** 450 East Galleria Drive
Henderson, NV 89015
And
2610 St. Rose Parkway
Henderson, NV 89074
- IV. **General:** The Permittee has applied for a National Pollutant Discharge Elimination System (NPDES) permit renewal to extend the authorization to discharge to the Las Vegas Wash.

The discharge is from a 32 million gallons per day (MGD) wastewater treatment plant located at 450 East Galleria, Henderson, NV 89015. Preliminary treatment at the plant consists of by step screens and grit removal. Biological nutrient removal basins are in the process of being added to the aeration basins, which currently achieve BOD removal and nitrification of ammonia. Phosphorus removal is accomplished through biological phosphorus removal, coagulation and precipitation in solids contact clarifiers, and filtration. Disinfection is achieved through chlorination, followed with dechlorination prior to discharge. Ultraviolet disinfection facilities are also under construction. Sludge removed from the activated sludge process is dewatered for final disposal in a landfill. The plant also has a separate aerated wastewater lagoon plant (WWTP#3) which is regulated by a groundwater discharge permit (NEV80003).

This permit also covers the 8 MGD Southwest Water Reclamation Facility (SWRF). This plant is under design and is projected to be in operation in mid-2009. The SWRF will produce reclaimed water that will be used for irrigation. Treatment at the plant will consist of bar and band screens, activated sludge with biological nutrient removal, membrane bio-reactors, and ultraviolet light for primary disinfection. Odor control will be used throughout the plant. Sludge from the plant will be returned to the sanitary sewers and treated at the main plant. Reclaimed water will also be chlorinated for distribution to the City's reclaimed water customers. Reclaimed water from the SWRF will be regulated under a state groundwater discharge

permit. Effluent that is not needed for irrigation will be transmitted via pipeline to the central Water Reclamation Facility described above for discharge to Las Vegas Wash. During an emergency, the SWRF may discharge up to 8 MGD of fully treated effluent from Outfall 002 through the storm-sewer system to Las Vegas Wash.

The majority of the flow into the plants is domestic wastewater. There is a small percentage of flow from industry in the service area and there is a pretreatment program which regularly samples the effluent from the industrial dischargers. The pretreatment program is authorized through the United States Environmental Protection Agency (USEPA).

The existing permit was issued on July 20, 2001, and expires on July 20, 2006. During that time, the plant has consistently been in compliance with the permit. The proposed permit is based on a completed permit application submitted by the Permittee, plant monitoring data, ambient water quality data, and a request for a mixing zone.

V. Discharge Characteristics: Discharges from the main plant have the following characteristics:

<u>Parameter</u>	<u>Long-Term Average, 2005</u>
Flow	21 MGD
CBOD ₅	<2 mg/L
BOD ₅	<2 mg/L
pH	6.5-8.9 SU
Chlorine Residual	<0.1 mg/L
Total Dissolved Solids	1360 mg/L
TSS	<2 mg/L
Ammonia as N	1.04 mg/L
Nitrate as N	10.70 mg/L
Total Kjeldahl nitrogen	<2 mg/L
Phosphorus as P	0.18 mg/L
Orthophosphate as P	0.13 mg/L
Dissolved oxygen	7.1 mg/L
Fecal coliforms	<2 MPN/100 ml

The Southwest Water Reclamation Facility is currently under design. The effluent design criteria for the SWRF are as follows:

<u>Parameter</u>	<u>Monthly Average</u>
Flow	8 MGD
BOD ₅	30 mg/L
TSS	30 mg/L

Ammonia as N	0.5 mg/L
Nitrate as N	10 mg/L
Phosphorus as P	0.2 mg/L (Phase I)
	0.1 mg/L (Phase II)
Fecal Coliforms	
30-day geometric mean	2.2 MPN/100 ml
Daily Maximum	23 MPN/100 ml

VI. Receiving Water: The receiving water is the Las Vegas Wash. The standards applicable to the Las Vegas Wash are attached to this fact sheet as Attachment A. Pursuant to NAC 445A.198, the designated beneficial uses for the appropriate reach of Las Vegas Wash are:

Irrigation

Watering of livestock

Recreation not involving contact with the water

Maintenance of a freshwater marsh

Propagation of wildlife

Propagation of aquatic life, excluding fish. This does not preclude the establishment of a fishery.

This reach of the Las Vegas Wash also has an established goal of the propagation of aquatic life, including, without limitation, fish by the next triennial review. This goal may be reevaluated in the near future considering the construction of the grade control structures in the Las Vegas Wash.

Las Vegas Wash has been included on the 303(d) list because of suspended solids and iron. The exceedances identified were not attributed to the Permittee or other publicly owned treatment works in Southern Nevada, but instead were attributable to erosion resulting from high velocity streamflows produced by steep gradients and from loose unconsolidated soils. Several erosion-control structures have been installed in the affected area, and additional structures are planned, along with streambank protection, revegetation, and other control measures. These measures have achieved compliance, and de-listing is expected.

VII. Summary of Changes From Previous Permit:

The main changes from the previous permit are:

Item	Change
Ambient Water Quality Monitoring	Replace 2 fixed-location monitoring stations in Las Vegas Wash and 5 fixed-location monitoring stations in Lake Mead with annual plan in which Permittee proposes and the Division approves locations of at minimum 3 stations in Las Vegas Wash and 5 in Lake Mead. Revision improves flexibility of monitoring program so that stations at locations no longer

	considered necessary can be moved to locations that provide representative data.
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VII. Proposed Effluent Limitations: The Permittee is required to meet the following permit limits. Note: The load limits are calculated using the 30 day average flow and the permit limit expressed as a concentration. If higher flows are allowed in future permits, the load limits will increase accordingly.

TABLE I.1 (Outfall 001, WATER POLLUTION CONTROL FACILITY)

<u>PARAMETERS</u>	<u>EFFLUENT DISCHARGE LIMITATIONS or REPORTING REQUIREMENTS</u>			<u>MONITORING REQUIREMENTS</u>		
	30 Day Average ²	7 Day Average ²	30-Day Average (lb/day)	Sample Location	Measurement Frequency	Sample Type
Flow-001	40 MGD	Monitor and Report: MGD	NA	INF, 001	Continuous	Flow meter
BOD₅ (Uninhibited)	30 mg/L	45 mg/L	10,008	001	Daily	Composite
	Monitor and Report	Monitor and Report	NA	INF		
Total Suspended Solids	30 mg/L	45 mg/L	10,008	001	Daily	Composite
	Monitor and Report	Monitor and Report	NA	INF		
BOD₅ (Uninhibited) & TSS	The Permittee shall demonstrate that the 30-day average percentage removal rate is at least 85%.			NA	Monthly	Calculate
pH	Minimum 6.0 and maximum 9.0 SU, except as allowed in Parts I.A.3 and I.A.19.		NA	001	Daily	Discrete
Fecal Coliform¹	Log mean 200	See footnote 1	NA	001	Daily	Discrete

<u>PARAMETERS</u>	<u>EFFLUENT DISCHARGE LIMITATIONS or REPORTING REQUIREMENTS</u>			<u>MONITORING REQUIREMENTS</u>		
	30 Day Average²	7 Day Average²	30-Day Average (lb/day)	Sample Location	Measuremen t Frequency	Sample Type
	cfu or mpn/100ml					
Total Residual Chlorine	NA	0.1 mg/L- except as allowed in Part I.A.19.	NA	001	Daily	Discrete
Total Phosphorus as P: mg/L	See Part I.A.2			001	Daily	Composite
Total Ammonia as N: mg/L	See Part I.A.2			001	Daily	Composite
Total Inorganic Nitrogen as N: mg/L	See Part I.A.3			001	Weekly	Composite
Total Dissolved Solids: mg/L	See Part I.A.4			001	Weekly	Composite
Priority Pollutants	Monitor and Report, See Attachment A			001	Per Part I.A.18.d.	Discrete or Composite
WET testing	See Part I.A.17.			001	Monthly	Composite
Receiving Water Monitoring	Monitor and Report			See Part I.A.21	See Part I.A.21	Discrete
Temperature: °C	Monitor and Report		NA	001	Weekly	Discrete
Dissolved Oxygen: mg/L	Monitor and Report		NA	001	Weekly	Discrete
Orthophosphorus as P: mg/L	Monitor and Report			001	Daily	Composite
Nitrate + Nitrite	Monitor and Report			001	Weekly	Composite

<u>PARAMETERS</u>	<u>EFFLUENT DISCHARGE LIMITATIONS or REPORTING REQUIREMENTS</u>			<u>MONITORING REQUIREMENTS</u>		
	30 Day Average ²	7 Day Average ²	30-Day Average (lb/day)	Sample Location	Measurement Frequency	Sample Type
as N: mg/L						
Total Kjeldahl Nitrogen as N: mg/L	Monitor and Report			001	Weekly	Composite

1. The discharge shall not exceed a log mean of 200 cfu or mpn per 100 ml over a 30 day period nor may more than 10 percent of the total samples taken exceed 400 cfu or mpn per 100 ml.
2. For those parameters sampled weekly or less frequently, the Permittee shall report the single value instead of the 7-day or 30 day average.

TABLE I.2 (Outfall 002, SOUTHWEST WATER RECLAMATION FACILITY)

<u>PARAMETERS</u>	<u>EFFLUENT DISCHARGE LIMITATIONS or REPORTING REQUIREMENTS</u>			<u>MONITORING REQUIREMENTS</u>		
	30 Day Average ²	7 Day Average ²	30-Day Average (lb/day)	Sample Location	Measurement Frequency	Sample Type
Flow-002	8 MGD	Monitor and Report: MGD	NA	002	Continuous	Flow Meter
BOD ₅ (Uninhibited)	30 mg/L	45 mg/L	2,002	002	Daily	Composite
	Monitor and Report	Monitor and Report	NA	INF		
Total Suspended Solids	30 mg/L	45 mg/L	2,002	002	Daily	Composite

<u>PARAMETERS</u>	<u>EFFLUENT DISCHARGE LIMITATIONS or REPORTING REQUIREMENTS</u>			<u>MONITORING REQUIREMENTS</u>		
	30 Day Average ²	7 Day Average ²	30-Day Average (lb/day)	Sample Location	Measurement Frequency	Sample Type
	Monitor and Report	Monitor and Report	NA	INF		
BOD₅ (Uninhibited) &TSS	The Permittee shall demonstrate that the 30-day average percentage removal rate is at least 85%.			NA	Monthly	Calculate
Fecal Coliform¹	Log mean 200 cfu or mpn/100ml	See footnote 1	NA	002	Daily	Discrete
pH	Minimum 6.0 and maximum 9.0 SU, except as allowed in Parts I.A.3 and I.A.19			002	Daily	Discrete
Total Residual Chlorine	NA	0.1 mg/L Except as allowed in Part I.A.19	NA	002	Daily	Discrete
Total Phosphorus as P: mg/L	See Part I.A.2			002	Daily	Composite
Total Ammonia as N: mg/L	See Part I.A.2			002	Daily	Composite
Total Inorganic Nitrogen as N: mg/L	See Part I.A.3			002	Weekly	Composite
Total Dissolved Solids: mg/L	See Part I.A.4			002	Weekly	Composite
Priority Pollutants	Monitor and Report, See Attachment A			002	Per Part I.A.18.d.	Discrete or Composite
WET testing	See Part I.A.17			002	Quarterly	Composite

<u>PARAMETERS</u>	<u>EFFLUENT DISCHARGE LIMITATIONS or REPORTING REQUIREMENTS</u>			<u>MONITORING REQUIREMENTS</u>		
	30 Day Average ²	7 Day Average ²	30-Day Average (lb/day)	Sample Location	Measurement Frequency	Sample Type
Temperature: °C	Monitor and Report		NA	002	Daily	Discrete
Orthophosphorus as P: mg/L	Monitor and Report			002	Daily	Composite
Nitrate + Nitrite as N: mg/L	Monitor and Report			002	Weekly	Composite
Total Kjeldahl Nitrogen as N: mg/L	Monitor and Report			002	Weekly	Composite

1. The discharge shall not exceed a log mean of 200 cfu or mpn per 100 ml over a 30 day period nor may more than 10 percent of the total samples taken exceed 400 cfu or mpn per 100 ml.
2. For those parameters sampled weekly or less frequently, the Permittee shall report the single value instead of the 7-day or 30 day average.

Attachment A This attachment to the permit is the list of Priority Pollutants which are required to be sampled under the pretreatment permit requirements.

IX. Proposed Technology Based Effluent Limitations: Federal regulations at 40 CFR section 133 require publicly owned treatment works to achieve specified limits in discharged BOD, suspended solids, and pH. The permit includes these limits.

X. Proposed Water Quality-Based Effluent Limitations: The Nevada water quality standards require that point source discharges not cause a violation of any applicable water quality standards in the receiving water nor interfere with the attainment or maintenance of beneficial uses. The following requirements are included in the permit to ensure that the discharge does not cause water quality standards violations. In addition, the permit requires monitoring and reporting of constituents which are present in the discharge and the subject of ambient water quality standards.

Total Dissolved Solids: The permit includes the goal of not more than a 400 mg/l increase in Total Dissolved Solids (TDS) over the drinking water supply, a goal established by the Colorado River Salinity Forum. The Permittee has implemented the salinity public education required by the permit. This activity is a continuing requirement of the proposed permit.

Phosphorus and Ammonia: Total Maximum Daily Loads (TMDLs) were developed for Total Ammonia as N and Phosphorus as P in 1989. The Permittee has been allocated a Waste Load for Total Ammonia as N and Total Phosphorus as P. This permit includes language which allows waste load allocation trading between the City of Las Vegas, Clark County Sanitation District, and City of Henderson (hereinafter Dischargers). The WLA applies to the combined loading from all outfalls. This permit condition constitutes a cooperative agreement between the Dischargers to allow discharge flexibility. Each facility has an **Individual Waste Load Allocation (IWLA)** and there is a **Sum of Waste Load Allocations (Σ WLA)** defined below for the three facilities. The Permittee shall be considered in compliance if either:

- i. The Permittee does not exceed the **IWLA** listed below or the **IWLA** in effect due to transfers, or
- ii. The **Sum of the Waste Load Allocations (Σ WLA)** listed below is not exceeded.

Waste Load Allocation Table

Constituent	City of Las Vegas IWLA	Clark County Sanitation District IWLA	City of Henderson IWLA	Σ WLA
Total Phosphorus as P	123 lb/day	173 lb/day	38 lb/day	334 lb/day, Note: This WLA only applies March 1 - October 31; no limit applies the rest of the year. Non-point source load is 100 lb/day.
Total Ammonia as N	358 lb/day	502lb/day	110 lb/day	970 lb/day, Note: This WLA only applies April 1 - September 30; no limit applies the rest of the year. No non-point source load.

Fecal Coliform. Water quality standards for Las Vegas Wash specify fecal coliform requirements to be imposed on discharges into the wash. Water quality standards for Lake Mead include fecal coliform standards. These standards have been imposed as effluent limits on discharges into the wash and Lake Mead.

Total Residual Chlorine. Water quality standards for Las Vegas Wash prohibit the discharge of toxic substances in toxic amounts. The Permittee dechlorinates the effluent to remove free chlorine. An excess of the dechlorinating agent is used to ensure that no free chlorine remains. The effluent limit of 0.1 mg/l Total Residual Chlorine is included in the permit as an indicator that no free chlorine is present in the effluent.

Acute WET Testing. Acute whole effluent toxicity requirement have been imposed to prevent discharges of toxic substances in toxic amounts.

XI. Special Conditions: In addition to the technology based effluent limitations and the water quality

based effluent limitations, the permit includes standard conditions required by 40 CFR section 122.41, including requirements on duty to comply, duty to reapply, need to halt or reduce activity not a defense, duty to mitigate, proper operation and maintenance, permit actions, property rights, duty to provide information, inspection and entry, monitoring and records, signatory requirement, reporting requirements (including planned change, anticipated noncompliance, transfers, monitoring reports, compliance schedules, 24 hour reporting, and other non-compliance), bypass requirements, and upset requirements. In addition, the permit includes the following special conditions.

Total inorganic nitrogen and pH. The Permittee is required to coordinate with the Clark County Water Reclamation District and the City of Henderson to determine whether Las Vegas Wash complies with the RMHQ criterion for total inorganic nitrogen, and for the beneficial use standard for pH. If the Permittee and other dischargers determine that the wash has exceeded these criteria, they must consider whether reasonable changes would result in compliance, and report to the Division.

Chronic WET Testing. The Permittee previously conducted a chronic whole effluent toxicity testing study and determined that there was no chronic whole effluent toxicity present in the effluent. The permit requires additional chronic WET testing to ensure that chronic toxicity does not appear.

Cadmium, copper, hexavalent chromium, molybdenum, selenium, silver, sulfide. The Permittee previous conducted studies to ascertain whether hardness levels above 400 mg/l provided additional protection against toxicity, and determined that Las Vegas Wash water, which contains 800 mg/l of hardness, had a protective effect. The permit requires annual data review to determine whether additional aquatic studies or other investigations are needed.

Biosolids. The permit includes requirements on the disposal or reuse of biosolids. No changes are proposed from existing requirements.

Pretreatment. The permit includes requirements for a pretreatment program, which the Permittee has established. No changes are proposed from existing requirements.

Miscellaneous. The permit includes miscellaneous requirements for odors, fencing, fees, operator qualifications, etc. No changes are proposed from existing requirements.

Effluent Monitoring. The permit includes extensive effluent monitoring requirements for all substances subject to effluent limitations or included in ambient water quality standards.

Ambient Water Quality Monitoring. The existing permit specifies locations and monitoring intervals for ambient water quality monitoring. The proposed permit would revise the provision by requiring the Permittee to submit a proposed monitoring plan annually, consistent with minimum requirements imposed by the permit. In the plan, the Permittee would identify locations and sampling schedules. The minimum permit requirements provide for monitoring at least as intensive as in the existing permit. The revisions allow for greater flexibility, including the moving of existing stations to areas of current interest, and the addition and

deletion of stations to provide monitoring for specific issues and for limited times.

XII. Reasonable Potential Analysis and Antidegradation Review. EPA regulations require that “Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.” (40 CFR § 122.44(d)(1)(i).) Before issuance of the permit in 2001, a detailed reasonable potential analysis was conducted on the potential for wastewater discharges from the City of Henderson, City of Las Vegas, and Clark County Water Reclamation District to cause or contribute to excursions above water quality standards. The conclusion from that analysis was that there was no reasonable potential, and no numeric effluent limits were imposed. Since that permit was issued, the Permittee, in coordination with the other Permittees, have conducted aquatic life studies demonstrating that Las Vegas Wash, which has hardness concentrations of 800 mg/l, provides a protective effect beyond the protective effect associated with 400 mg/l of hardness, and that it is appropriate to use the concentrations of 800 mg/l in calculating hardness-based water quality criteria. The discharges are unlikely to exceed the ambient water quality metals criteria, and there is no reasonable potential for Las Vegas Wash.

In Nevada, antidegradation review is conducted through the criteria known as Requirements to Maintain Higher Quality (RMHQ). RMHQ criteria were reviewed and applied to this permit, and none of the discharges can reasonably be expected to exceed any RMHQ criterion.

XIII. Flow: 40 MGD - Galleria
8 MGD - Southwest Water Reclamation Facility

XIV. Quantities: At the 30 day average flow allowed by this permit, the discharge from Outfalls 001 and 002 combined will consist of the following loadings:

	Outfall 001	Outfall 002
BOD₅	10,008 lb/day	2,002 lb/day
Total Suspended Solids	10,008 lb/day	2,002 lb/day

XV. Discharges From Future Outfalls

As part of its application, the Permittee has submitted information on proposed discharges from future outfall 003 to lower Las Vegas Wash and from future outfall 004 to Lake Mead. These discharges will require the construction of a pipeline from the Permittee’s plant along Las Vegas Wash to Lake Mead. This proposed pipeline will require approval of federal agencies, and is currently undergoing environmental review through the preparation of an environmental impact statement. The Division is holding the application for additional outfalls in abeyance at this time, pending a written request from the Permittee to proceed. When it receives a written request to proceed, the Division will prepare a major modification of the permit, which will be subject to public review and comment. No additional application will be required from the Permittee.

XVI. Procedures for Public Comment

The Notice of the Division's intent to reissue a permit authorizing the facility to discharge to surface waters of the State of Nevada subject to the conditions contained within the permit, is being sent to the **Las Vegas Review Journal** for publication. The notice is being mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit can do so in writing until 5:00 P.M. March 7, 2003, a period of 30 days following the date of the public notice. The comment period can be extended at the discretion of the Administrator.

A public hearing on the proposed determination can be requested by the applicant, any affected State, any affected interstate agency, the Regional Administrator of EPA Region IX or any interested agency, person or group of persons. The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted. Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determined to be appropriate. All public hearings must be conducted to accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.650.

XVII. Proposed Determination

The Division has made the tentative determination to re-issue the proposed 5-year permit.

Prepared by: Alan Tinney
_____, 2006